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Title

GOVERNANCE OF TRANSDISCIPLINARY RESEARCH IN PROTECTIVE SPACES

Authors

Wouter Boon, University of Utrecht, Innovation Studies Group, Heidelberglaan 2, 3584 CS, Utrecht, The Netherlands.
E-mail: w.boon@rathenau.nl

Dr. Edwin Horlings' Rathenau Instituut, Anna van Saksenlaan 51, PO Box 95366, 2509 CJ Den Haag, The Netherlands.

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UAM-Accenture Chair

Institute of innovation and knowledge management

Grand Challenges as identified by the European Union in its Horizon 2020 R&D policy plans are complex problem areas involving a large array of stakeholders, high stakes and high degrees of uncertainty. Research and development is expected to contribute substantially to their solution. The multifaceted nature of the Grand Challenges requires that part of the research is done in collaboration between a diversity of scientific disciplines and societal actors, including public and private stakeholders.

New, demand-driven instruments dealing with these challenges include research programmes and projects aiming at knowledge co-production. Such programmes and projects involve traditional knowledge producers, such as academic and non-academic researchers, as well as companies, policy makers, regulators, NGOs and citizens. Knowledge co-production involves a combination of formal, scientific knowledge and local, experiential knowledge. Literature on user involvement in technological developments shows that this combination might be instrumental in the innovation and implementation process, lead to creative contributions, and can legitimise research outcomes (Boon, Moors et al. 2011). The aim of this collaborative approach across different communities, which can be characterised as transdisciplinary and contextualised, is to have a transformative effect on the governance of knowledge production.

The incentives as valid in science are not aligned to the needs of society. The incentives of scientists focussed on a global community rather than on local contexts. The peers that control access to journals, conferences, and careers expect global significance. Guided by the principles of New Public Management, publications and citations have become the cornerstone of evaluating university careers. The incentives of societal stakeholders are incompatible with those of scientists. Stakeholders generally have little experience or patience with research. Their organisations expect a short-term return on their investments and are averse to uncertainty and the risk of failure. In other words, where a transdisciplinary approach to science is required, regular knowledge markets tend to fail. Protection against regular selection pressures might be beneficial for this kind of research.

Objective of the paper

This paper focuses on knowledge co-production in protective spaces. We examine the type of knowledge production that can only exist when shielded from the external pressures of the traditional science system *and* of the incentive systems of the societal partners. The idiosyncratic knowledge production process in which a heterogeneous group acts as knowledge (co-)producers is thus protected. But the content of the knowledge itself can also be different; science is produced that is societally robust. Shielding and nurturing is needed because the 'home organisations' of the participants in the co-production exercise might value the knowledge products differently.

Various scholars have studied protective spaces as part of the multi-level perspective on technological development (Kemp, Schot et al. 1998; Schot and Geels 2008). In this perspective, pristine and novel technologies are developed in niches in which these technologies are shielded from pressures from the prevailing socio-technical regime. This shielding is needed because the innovations are not ready to compete with dominant technologies. As part of this strand of literature, attention has been paid to the dynamics inside these niches (Raven 2005; Ulmanen, Verbong et al. 2009). However, protection has been perceived as given and has consequently remained underconceptualised (Smith and Raven 2012). This paper wants to add to the

conceptualisation and empirical grounding of niche protection. We especially build on the processes, as proposed by Smith and colleagues (Smith, Kern et al. submitted), which facilitate niche protection: shielding, nurturing and empowering.

This paper wants to contribute to current literature on protection and shifts the notion of protective spaces from the realm of technology development to science. In the sociology of science, protection is not a novel concept. In some instances knowledge production takes place in a sheltered space, shielded from the norms and values of the science community and the science system, as well as from society. For example, agendas of individual scientists or research groups can deviate markedly from the scope of the core discipline. Groundbreaking work involves a high risk of being left empty-handed or detached from the science community, at the same having the potential of high returns (Dasgupta and David 1994; Stephan 1996).

The paper aims to contribute to the understanding of protective spaces in the context of knowledge (co-)production. In order to reach this objective, a sequence of three research questions is answered. First, we want to describe the characteristics of niche boundaries. What is protection in the context of knowledge co-production? Second, we focus on how this niche protection is arranged: to what extent do the protection processes of shieleding, nurturing and empowering contribute to niche protection in knowledge coproduction? Third, niches do not function in isolation. Part of their legitimacy is derived from how they relate to their context. How do actors and the knowledge they produce relate to their environment, e.g. in terms of funding and competing visions on the research problem at hand? And how do these contexts influence the niche boundary?

Approach

In the Netherlands in the 2000s more than 40 large-scale mission-oriented research programmes were financed, a lot of them providing a ‘safe haven’ for knowledge co-production and fundamental research. We have studied 14 knowledge co-production projects in the context of Knowledge for Climate. Knowledge for Climate is a large-scale programme that runs from 2008 to 2014 and that concentrates on researching adaptation to climate change. The programme involves a wide range of actors on various different levels. The focus of the programme is on the local and regional level where adaptation measures are applied. The major part of the programme is delegated to nine so-called ‘hotspots’ in which traditional knowledge producers, such as universities and knowledge institutes, cooperate with traditional knowledge users, e.g. municipalities, water boards and companies. Some of these hotspots are indeed locally concentrated, such as the Rotterdam region and its port, and Schiphol Airport. Other hotspots are more thematically formulated, such as those focusing on ‘dry rural areas’ and ‘shallow waters and peat meadow areas’.

We used a mixed-method approach, combining qualitative and quantitative methods. First, we conducted in-depth interviews with participants of hotspot research projects coming from different kinds of backgrounds. The aim of the interviews was to uncover behavioural and attitudinal aspects of protection, as well as the narrative that is built by project members as part of the protection activities. We also interviewed actors that are part of the environment of the projects and the organisations to which the project members are affiliated, in order to sketch how project outsiders perceive the narrative behind and legitimacy of the protective spaces.

Second, document analysis was done with the purpose of obtaining an overview of the context and content of the projects. This approach uncovered the codified knowledge of the project, which could be used to map the most significant events and outcomes of the project on a timeline. The documents were obtained from the project website and replenished with documents provided by the Knowledge for Climate programme bureau and interview respondents.

Lastly, bibliometric analysis was used to explore the research portfolio of the scientists involved. Applying a scientometric method developed by Horlings and Gurney (2012), we investigated to what extent their involvement in the project represents a novel contribution to their own portfolio as well as to their national and international scientific communities.

Expected results

Initial results show the following:

- The boundaries of the protective spaces are developed and maintained by both internal and outward-oriented activities; knowledge users co-produce these activities.
- One important protection dynamic is empowerment. In this context empowerment is an outward-oriented process having users articulate the significance of the narrative on which protection is based, and counter anti-voices.
- Protection vis-à-vis aggregation: the research findings need to be aligned to the knowledge demands of 'home organisations', societal stakeholders, and the scientific communities. This calls for transfer and aggregation activities that may not always be problematic: in this case there was a link to the 'global' community, at the same time leaving room for local interpretations as articulated by users.

All in all, this study offers insights into the protection of knowledge co-production in research projects and how these projects relate to outside pressures and the selection environment of science and society. By this it provides recommendations for governing and designing research policy for large-scale research programmes that can be characterised as multi-actor, multi-level, transdisciplinary and public-private collaborations.

Keywords

Governance, knowledge co-production, protective spaces, user-producer interaction.

Might fit well in themes like 'Public-private partnerships', 'Governance and institutions' or 'Innovative research and innovation policies'

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